Catherine Downen
ODA Enterprise Program Administrator - TC
500 Gulfstream Road
M/S R-07
Savannah, GA 31407 USA
Telephone +1 912 395 0912
Catherine.Downen@gulfstream.com

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In reply, reference letter number: G-CAO-22-100431

U.S. Department of Transportation
Docket Operations
West Building Ground Floor, Room W12-140
1200 New Jersey Avenue, SE.
Washington, DC 20590

Subject: Request for Revision to Exemption No. 9940A - Exemption from Section 25.1447(c)(1) of Title 14, Code of Federal Regulations, Equipment Standards for Oxygen Dispensing Units

Enclosure(s):
1) Petition for Permanent Exemption – Gulfstream Aerospace Corporation – High Landing Field Elevation Operations – Model GVIII-G800

Reference(s):
1) Regulatory Docket No. FAA-2009-0601, Exemption No. 9940, dated October 6, 2009, Exemption from Section 25.1447(c)(1) of Title 14, Code of Federal Regulations
2) Regulatory Docket No. FAA-2009-0601, Exemption No. 9940A, dated May 5, 2020, Exemption from Section 25.1447(c)(1) of Title 14, Code of Federal Regulations
3) Regulatory Docket No. FAA-2009-0898, Exemption No. 10044, dated April 1, 2010, Exemption from Section 25.1447(c)(1) of Title 14, Code of Federal Regulations
4) Regulatory Docket No. FAA-2015-3311, Exemption No. 13582, dated November 11, 2015, Exemption from Section 25.1447(c)(1) of Title 14, Code of Federal Regulations

ODA Project Number(s): AT-01-2015-0017

Dear Sirs:

In accordance with 14 CFR Part 11, Gulfstream Aerospace Corporation requests consideration to revise Regulatory Docket No. FAA-2009-0601, Exemption No. 9940A, dated May 5, 2020, (Reference 2) originally issued to relieve the Gulfstream GVI model aircraft from full compliance with 14 CFR 25.1447(c)(1) at amendment 25-116, Equipment Standards for Oxygen Dispensing Units (Reference 1) and revised to include the Gulfstream GVIII-G700 model aircraft. This revision to the exemption is being requested to include the Gulfstream GVIII-G800 model aircraft, a derivative model of the GVI aircraft. Petition for Permanent Partial Exemption – Gulfstream Aerospace Corporation – High Landing Field Elevation Operations – Model GVIII-G800 is provided in support of this request (Enclosure 1).

Gulfstream believes that good cause exists why action on this petition should not be delayed by publication and comment procedures. We request that the 120-day FAA review and processing period specified in 14 CFR 11.63(d) be reduced to 60 days. Gulfstream feels this request is appropriate as it does not set a precedent, and because the relief requested herein is identical to exemptions granted previously (References 1-4).

Should you have any further questions, or require any additional information, please contact CAO Airworthiness Engineering Specialist Andrea Burkhardt at Andrea.Burkhardt@gulfstream.com or (912) 251-1712 (office), or the TC Program Administrator Tom Strohmayer at Thomas.Strohmayer@gulfstream.com, (912) 395-7778 (office) or (912) 433-6002 (mobile).

Respectfully,

Catherine M. Downen

Catherine M. Downen
ODA Enterprise Program Administrator - TC
Gulfstream Aerospace Corporation

Petition for Permanent Exemption
Gulfstream Aerospace Corporation
High Landing Field Elevation Operations
Model GVIII-G800

This petition is to amend Exemption 9940A to include the model GVIII-G800.

Relief from section 14 CFR Part 25.1447(c)(1) Amdt. 25-116

Gulfstream Aerospace Corporation (Gulfstream) of Savannah, Georgia has submitted an application to the FAA's Atlanta Aircraft Certification Office to amend the Gulfstream Model GVI type certificate (T00015AT) to add a derivative model aircraft to be known as the Gulfstream model GVIII-G800. Project Number AT-01-2015-0017 has been assigned to this effort. Gulfstream intends to certify the GVIII-G800 aircraft configuration to operate at airports with a landing field elevation (LFE) up to 15,000 feet.

14 CFR section 25.1447(c)(1), Amendment 25-116 - Requires that there must be an oxygen dispensing unit connected to oxygen supply terminals immediately available to each occupant, wherever seated and further it states in part that, "If certification for operation above 30,000 feet is requested, the dispensing units providing the required oxygen flow must be automatically presented to the occupants before the cabin pressure altitude exceeds 15,000 feet."

In accordance with the provisions of 14 CFR 11.81, Gulfstream requests an exemption to 14 CFR 25.1447(c)(1). This will allow for GVIII-G800 to operate in and out of airports with landing field elevations approaching 15,000 feet and will prevent nuisance deployment of passenger oxygen masks. Gulfstream is proposing alternative design requirements to provide an appropriate equivalent level of safety. The information provided herewith will outline this rationale.

Supportive information

In order for the GVIII-G800 to provide the additional capability for landing at airports up to 15,000 feet, the Cabin Pressure Control System (CPCS) and passenger oxygen control panel will be configured to allow the cabin internal pressure altitude to reach as high as 15,310 feet during normal operation.

Factors supporting the Petition

14 CFR 25.1447(c)(1) was designed to provide passenger safety during flight conditions. Gulfstream proposes that passenger safety can be maintained during all flight conditions and can be further enhanced with simple and logical flight crew procedures to allow operation at high altitude airports. The changes proposed are designed to maintain an equivalent level of safety during flight while minimizing the possibility of nuisance passenger oxygen mask deployment during takeoff or descent at high altitude airports.

The GVIII-G800 passenger oxygen system will be designed to provide operations into high LFE airports. The design will prevent nuisance deployment of the passenger oxygen masks when operating into and out of airports up to 15,000 feet LFE. 14 CFR 25.1447(c)(1) states that oxygen dispensing units must be presented to the occupants before the cabin pressure altitude exceeds 15,000 feet and that the crew must have a manual means of making the dispensing

units available in the event of a failure of the automatic system. An exemption is requested to allow a maximum oxygen altitude limit of more than 15,000 feet.

The passenger oxygen control system design will account for standard landing field elevations, and will have a secondary setting for high landing field elevations. To provide this, the Passenger Oxygen Control Panel will have an “ALT SELECT” airport elevation selection switch installed that has two positions:

"Normal": automatic passenger oxygen mask activation at 14,750 ± 250 feet.
"HI ALT": automatic passenger oxygen mask activation at 15,750 ± 250 feet.

During operations into and out of an airport with a landing field elevation above 14,000 feet, "HI ALT" must be selected in order to reset the automatic passenger oxygen mask activation to approximately 15,750 feet and prevent a nuisance deployment of the passenger oxygen masks. The switch remains in the "HI ALT" position during ground operations, takeoff, and the initial climb segment. An indication light on the switch is illuminated when it is in the "HI ALT" position so that the crew is reminded to reset the switch after departure from high altitude airports. The indication light turns off when the switch is reset to "NORMAL". The manual mask deployment feature will be available regardless of the “ALT SELECT” switch position.

Gulfstream will include AFM operational procedures for high elevation airports. For operations at LFEs > 14,000 feet, the procedures will instruct the crew to depress the "HI ALT” switch on the passenger oxygen control panel during descent, and conversely to extend the switch after takeoff when the cabin altitude has decreased below 14,000 feet.

The Operating Manual high elevation procedures will recommend that both pilots use supplemental oxygen until the cabin altitude is less than 10,000 feet, and require one pilot to use supplemental oxygen during ground operations, climb from, or descent into an airport having a field elevation greater than 9,500 feet. If the airplane takes off unpressurized for any reason (crew error, CPCS failure, etc.) when departing an airport with an elevation above 14,500 feet, the passenger oxygen masks will be automatically presented to the passengers at 15,750 ± 250 feet.

The crew will be alerted to Low Cabin Pressure at cabin altitudes appropriate for high landing field elevation. The CPCS logic (which is discussed in the AFM) specifies that during descent / climb, the “Cabin Pressure Low” Warning CAS message is reset according to the airport LFE selected (see below).

Landing Field Elevation (Entered in FMS)	**“Cabin Pressure Low” Warning CAS Message Setpoint for Aircraft with 15,000 feet LFE Maximum**
Less than 7,500 feet	8,000 feet
7,500 to 9,500 feet	10,000 feet
9,500 feet to 14,000 feet	14,500 feet
14,000 feet to 15,000 feet	15,500 feet

The crew will be alerted anytime the “Cabin Pressure Low” setpoint is above 10,000 feet through an advisory (blue) CAS message "Cabin Alt Alert Exceeds 10K”. The CPCS logic also resets this warning so that if the airplane altitude is above 34,000 feet or the cabin altitude is 6,000 feet or lower, the “Cabin Pressure Low” setpoint changes to 8,000 feet. If the actual cabin

altitude is not below 8,000 feet when the aircraft altitude exceeds 34,000 feet, then the “Cabin Pressure Low” CAS message will be triggered.

The GVIII-G800 passenger oxygen control system will incorporate a digital cabin pressure altitude sensor. This design will increase the accuracy and reliability of the passenger oxygen system over previous mechanical aneroid control systems. The new design will utilize a 3-way knob (Off, Auto, and Manual selections). In the event of a failure of the automatic system to deploy the passenger oxygen masks, the indication light on the passenger oxygen control panel (copilot side console) will not illuminate, thereby providing indication to the crew that the passenger oxygen is not being automatically delivered to the passengers. The flight crew will then have the ability to manually deploy the oxygen masks to the passengers. In the event of “Cabin Pressure Low” warning CAS message, the AFM emergency procedure includes a step to select Manual on the Passenger Oxygen control panel, ensuring passenger oxygen mask deployment.

Effect of the Exemption on Safety

The safety features described above are to ensure the avoidance of nuisance passenger oxygen mask deployment while still allowing automatic deployment in the event of a CPCS failure during operations into high LFE airports. The proposed CPCS will comply with 14 CFR 25.841(a)(1) as there are no probable failure conditions identified in the pressurization system. The CPCS and passenger oxygen control panel meet or exceed the FAA probability of failure requirements in all areas. As stated earlier, in the event of an un-annunciated CPCS failure, the passenger oxygen masks will drop automatically at a cabin altitude of no more than 16,000 feet. Manual passenger oxygen mask deployment is always available to the flight crew in the event of low cabin pressure indication and the passenger oxygen masks fail to automatically deploy.

The exemption requested would not adversely affect the level of safety provided for the GVIII-G800 aircraft.

Issue of Public Interest

Gulfstream Aerospace Corporation designs, develops, manufactures, markets, and services the world's most technologically advanced business jet aircraft to an international market. Gulfstream's leadership position in the global business jet market is due to the efforts of its nearly eight thousand employees in the manufacturing plants, completion centers, and service centers across North America. The corporation utilizes numerous products, such as avionics and environmental control systems, from scores of suppliers located throughout the United States. Gulfstream competes for new business all over the world. Although the current world economy has slowed in comparison to previous years, the corporate aircraft market is expected to grow. This exemption will directly impact the high-altitude utility of the GVIII-G800 aircraft, thereby having a direct effect on sales. The manufacture, completion, and support of Gulfstream aircraft would aid in the stabilization of the job market as well as the growth of the American economy, which is in the interest of the public.

High landing field elevation operations are being requested by prospective aircraft operators who compare the GVIII-G800 with products of European and other foreign aircraft manufacturers. This operational capability will make Gulfstream aircraft more marketable to these prospective operators. The exemption as proposed above is in essence an alternative method of achieving an appropriate level of safety, while at the same time providing features attractive to prospective purchasers.

Waiver of Notice and Public Procedure

Gulfstream Aerospace Corporation respectfully requests that action on this petition should not be delayed by publication and comment procedures. Gulfstream feels that the nature of this exemption is effectively identical to those of previously granted for which there were no public comments received.

Previously Granted Exemptions:
Exemption No. 9940A, Gulfstream GVI and GVIII-G700
Exemption No. 10044, Gulfstream GIV-X and GV-SP
Exemption No. 13582, Gulfstream G500 and subsequent derivatives
Exemption No. 6076, Boeing 757
Exemption No. 8668, Boeing 737
Exemption No. 9801, Boeing 787
Exemption No. 6994, Airbus A320

Operation Outside of the United States

Gulfstream requests consideration be given to extending this exemption for operation outside of the United States. Gulfstream aircraft are routinely registered and operated outside of the United States and projections are the same for the GVIII-G800 model. Gulfstream believes that limiting this exemption to use within the U.S. would put unfair restrictions on the marketability of this aircraft.

Conclusion

Gulfstream believes that the above arguments favor an exemption from 14 CFR 25.1447(c)(1) that would allow uncomplicated operations into landing fields up to 15,000 feet for the GVIII-G800 aircraft. In addition, Gulfstream believes that an exemption is in the public interest and will not adversely affect passenger safety.